CLAIMS

What is claimed is:

1. An optical pickup actuator for use with an objective lens and a holder on a base, comprising:

a blade holding the objective lens;

a plurality of wires to movingly support the blade so that the blade moves relative to the holder;

a coil installed to the blade, walls of the coil defining a cavity in the coil;

a first magnet installed on the base so as to at least partially be positioned inside the cavity; and

a second magnet installed outside the cavity so as to at least partially face the first magnet, so that a portion of the coil is positioned between the first magnet and the second magnet,

wherein an outer surface of the first magnet facing the coil is polarized into a first pole and an inner surface of the first magnet is polarized into a second pole.

2. The optical pickup actuator according to claim 1, wherein the first magnet is box-shaped with walls of the box defining an opening in the box.

3. An optical disc drive for use with an objective lens and a holder on a base, comprising:

an optical pickup, the optical pickup having a spindle motor that spins a disc; and

an optical pickup actuator that controls a position of the objective lens to record or reproduce information on or from the disc by radiating light onto a desired position of the disc via the objective lens,

wherein the optical pickup actuator comprises:

a blade holding the objective lens;

a plurality of wires to movingly support the blade so that the blade moves around the holder;

a coil installed in the blade, walls of the coil defining a cavity in the coil;

a first magnet installed on the base so as to at least partially be positioned inside the cavity; and

a second magnet installed outside the cavity so as to at least partially face the first magnet, so that a portion of the coil is positioned between the first magnet and the second magnet,

wherein an outer surface of the first magnet facing the coil is polarized into a first pole and an inner surface of the first magnet is polarized into a second pole.

4. The optical disc drive according to claim 3, wherein the first magnet is box-shaped with walls of the box defining an opening in the box.

5. The optical pickup actuator according to claim 1, wherein the first magnet interacts with a current flowing through the coil to generate an electromagnetic force.

6. The optical disc drive according to claim 3, wherein the first magnet of the optical pickup actuator interacts with a current flowing through the coil to generate an electromagnetic force.

7. A method to increase drive sensitivity of an optical pickup actuator, comprising:

flowing a current through a coil in the optical pickup actuator, the coil positioned between a plurality of magnets;

generating a plurality of forces from the flow of current, wherein each of the plurality of forces is generated in substantially the same direction as a main moving force to move a blade; and

moving the blade of the optical pickup actuator with the plurality of generated forces.

8. The method to increase drive sensitivity according to claim 7, wherein the moving the blade comprises focusing an objective lens mounted on the blade.

9. An optical pickup actuator for use with an objective lens and a holder on a base, comprising:

a blade holding the objective lens;

a plurality of wires to movingly support the blade so that the blade moves relative to the holder; and

a device having generating capability to generate a plurality of forces to move the blade,

wherein each of the plurality of forces generated by the device substantially act to move the blade in a same direction as a main driving force.

10. The optical pickup actuator according to claim 9, wherein the device comprises:

a coil having walls defining a cavity in the coil;

a first magnet at least partially positioned inside the cavity that interacts with a current flowing through the coil to generate an electromagnetic force; and

a second magnet installed outside the cavity so as to at least partially face the first magnet, so that a portion of the coil is positioned between the first magnet and the second magnet.

11. The optical pickup actuator according to claim 10, wherein an outer surface of the first magnet facing the coil is polarized into a first pole and an inner surface of the first magnet is polarized into a second pole, opposite the first pole.

12. An optical pickup actuator for use with an objective lens and a holder on a base, comprising:

a blade having a first cavity;

a plurality of wires to movingly support the blade so that the blade moves relative to the holder;

a focusing coil and at least one tracking coil installed within the first cavity of the blade, the walls of the focusing coil defining a second cavity in the focusing coil;

a first magnet installed on the base so as to be positioned inside the second cavity; and

a second magnet installed in the first cavity and outside the second cavity so as to at least partially face the first magnet and so that a portion of the focusing coil is positioned between the first magnet and the second magnet,

wherein an outer surface of the first magnet facing the focusing coil is polarized into a first pole and an inner surface of the first magnet is polarized into a second pole.

13. The optical pickup actuator according to claim 12, wherein the first magnet interacts with a current flowing through the focusing coil to generate an electromagnetic force.

14. An optical pickup actuator for use with an objective lens and a holder on a base, comprising:

a blade holding the objective lens;

a plurality of wires to movingly support the blade so that the blade moves relative to the holder;

a focusing coil and at least one tracking coil installed to the blade, walls of the focusing coil defining a cavity in the focusing coil;

a first magnet having an opening in the center thereof and disposed in the cavity of the focusing coil; and

a second magnet positioned outside the focusing coil so as to at least partially face the first magnet and so that a portion of the focusing coil is positioned between the first magnet and the second magnet.

15. The optical pickup actuator according to claim 14, wherein inner and outer surfaces of the first magnet are polarized into opposite poles, and substantially all portions of the outer surface of the first magnet facing the focusing coil belong to the same pole.

16. The optical pickup actuator according to claim 15, wherein a main driving force for driving the blade in a focusing direction is generated by a current flowing through a front portion of a focusing coil, and current flowing through a rear, a left, and a right portion of the focusing coil generate forces in substantially the same direction as the main driving force.

17. An optical pickup actuator for use with an objective lens and a holder on a base, comprising:

a blade holding the objective lens;

a plurality of wires to movingly support the blade so that the blade moves relative to the holder;

a focusing coil and at least one tracking coil installed to the blade, walls of the focusing coil defining a cavity in the coil;

a first magnet having an opening in the center thereof, and disposed in a cavity inside the focusing coil; and

a second magnet positioned outside the focusing coil so as to at least partially face the first magnet and so that a portion of the focusing coil is positioned between the first magnet and the second magnet.

18. The optical pickup actuator according to claim 17, further comprising an inner surface of the first magnet polarized into a first pole and an outer surface of the first magnet being polarized into a second pole, opposite the first pole, and substantially all portions of the outer surface of the first magnet facing the focusing coil belong to a same pole.

19. An optical pickup actuator for use with an objective lens and a holder on a base, comprising:

a blade having a cavity;

a plurality of wires to movingly support the blade so that the blade moves relative to the holder; and

a focusing coil positioned in the cavity;

wherein a magnetic flux acts so as to generate forces in a front, a rear, a left, and a right portion of the focusing coil and a resultant of the forces acts in substantially a same direction as a main moving force to move the blade.

20. The optical pickup actuator according to claim 19, wherein the magnetic flux increases or decreases at substantially the same time in each portion of the focusing coil.